

RCA SERVICE COMPANY
A DIVISION OF RADIO CORPORATION OF AMERICA
GOVERNMENT SERVICES
CHERRY HILL OFFICES
CAMDEN 8, NEW JERSEY

1 April 1965

National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, Maryland

Attention: Mr. J. Meahan
NASA Project Office

This is the twenty-fifth monthly report of the RCA Service Company activities on the Nimbus Integration Project at Valley Forge, Pennsylvania. It covers a four week period from 1 March 1965 to 28 March 1965. The manning remained at seven engineers and technicians.

A roster of personnel and hours worked follows:

FACILITY FORM 608	N 65-85384	(THRU)
	(ACCESSION NUMBER)	(CODE)
	CR 63160	(CATEGORY)
	(PAGES)	
	(NASA CR OR TMX OR AD NUMBER)	

Schedule of Hours

	<u>Straight Time Hours</u>	<u>Overtime Hours</u>	<u>Absent Hours</u>
F. Berst	160	--	--
G. Curran	144	--	16
N. Franklin	160	23	--
M. Morgan	160	16	--
W. Strick	144	--	16
J. Toczylowski	160	6	--
R. Wilkins	124	--	32
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TOTAL	1052	45	68

1 March to 28 March 1965

TECHNICAL REPORT

- 3-1 The F-3 power supply subsystem was bench-tested as follows:
Batteries were completely discharged; then put on charge for a total of 41.6 ampere-hours.
Batteries were discharged at a 5.8 ampere total rate. The capacity was measured to be 23.68 ampere-hours for eight batteries - then module #132 was taken off line and the seven batteries discharged for an additional 2.76 ampere-hours.
Nine batteries were load-shared (for an eight battery system with one spare). The batteries were recharged and a normal bench-test conducted. Results were satisfactory, except that module #136 discharge current telemetry was out of specification.
Let-down boxes were installed on the batteries until all cells were below 0.008 volts.
A short-test on all modules was completed satisfactorily.
Shorting plugs were installed on all batteries.
Modules #127, 130 and 133 were delivered to the G-E test group on March 8 to be placed in cold storage.
Modules #128, 131, 132, 134 and 135, together with battery electronics #105 were placed in bonded stock.

The P-2 APTS subsystem was set up on the bench and a routine bench-test was completed satisfactorily on 3-2.

- 3-2 The F-4 AVCS subsystem was received from AED.

Tests to further investigate the 300 cps interference on APTS Mufax pictures were conducted in the bench-test area of SEITF. A brief summary of the tests and results follows:

During the normal bench-test no 300 cps interference was observed. G-E issued a PIR on 3-2-65. An attempt to perform the test as stated was begun. However, it was not possible to attenuate the signal as specified due to insufficient shielding in the Ground Station.

Tests were continued. DCG ON or OFF made no difference in the level of interference in the print-out.

A transmitter with a separate power source and with no modulation caused the same amount of interference in the APTS as the regular APTS transmitter. As the tests continued, it became evident that electromagnetic radiation affected certain areas of equipment (connectors and harness) in a different manner than electrostatic radiation. Each type of radiation could cause 300 cps interference, but not necessarily at the same locations or the same level.

Messrs. Phil Godfrey, AED, and John Moody, NASA, observed some of the tests. During this time, Mr. Godfrey disabled the 300 cps circuit inside the camera electronics module. When this was done, the 300 cps interference was no longer visible, even when the probe was placed near the most sensitive area of the subsystem. The 300 cps circuit was then

restored to normal. It was noted that the RF signal could be made to blank out the APTS video signal completely. The spacecraft harness was installed (unshielded) and tests performed. Then, the harness was removed, wrapped with copper shielding by G-E, and reinstalled. The shielding did not come very close to the connectors. When the connectors were included in the shielding, the level of interference was reduced.

The spacecraft antenna was connected to the subsystem and tuned for minimum VSWR. It was noted that the position of the antenna with respect to the subsystem could cause varying levels of interference, depending upon the surrounding environment.

The testing was concluded with a routine bench-test of the APTS subsystem on 3-19. During this test, it was noted that the video portion of the Mafax print-out was white. The last picture printed during the interference tests had been normal.

- 3-1 A set of APTS Mafax equipment was received from Goddard. It had been removed from the PVR Van when the Van was at Goddard.
- 3-1 The HAX module, Serial #E-1, and the Prototype HAX Module Tester were returned to AED for adjustment and test.
- 3-1 The HRIR Radiometer, recorder and S-Band transmitter were delivered to SETF to be used in interference tests. A brief summary follows:

Efforts to locate the source of the diagonal lines that appear on HRIR data were continued with the Prototype Radiometer and Recorder, and the "UC" clock on the bench. The radiometer reference was cooled with dry ice, and a strip heater was used as a target. Later, liquid nitrogen was used to cool the reference. The Multiplexer and S-Band transmitter were utilized to transmit data to the Ground Station. The spacecraft harness was connected to the HRIR subsystem and the tests were repeated. RF energy from a Beacon transmitter was coupled to the radiometer output. In none of the above tests could the same effect be seen as that which appears when the spacecraft operates in a vacuum environment. The diagonal line interference that could be introduced into the system by coupling a 15.8 cps signal was entirely different in alant from the interference present in orbital data.

- 3-10 GSE #6 equipment (FGS #2) and an APTS Integration Equipment Rack were returned to AED.

Command Receiver, Serial #P-1A, was sent to AED for use on another project.

Battery module #136 was returned to AED for repair of the discharge-current telemetry circuit.

- 3-13 The APTS transmitter, Module #4, Serial #508 F-6, was bench-tested satisfactorily and turned over to G-E for use in RF tests.

TECHNICAL REPORT (continued)

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- 3-19 The P-2 APTS subsystem was returned to AED for repair. The Mufax print-out was nearly completely white, with some camera reticle marks showing, although the 300 cps start tone and the DCG markings were normal.

The S-Band Transmitter, Serial #9M1, was bench-tested. Output power was low, the same as in previous tests.

- 3-20 The HRIR Recorder P-3 (F-1) was bench-tested satisfactorily.

- 3-22 The F-4 AVCS subsystem was set up on the bench and a normal bench-test started. It was completed on 3-25. Results were satisfactory.

- 3-24 The HAX Module, Serial #F-1, and the Prototype HAX Module Tester were received from AED. The HAX Module was bench-tested with satisfactory results.

The Mincom Tape Recorder was removed from the PFR Van to be used in the Vibration building for a special test.

- 3-25 The P-2 APTS subsystem was received from AED and bench-tested. Mufax pictures are lighter than normal. Contrast ratio is about 60%.

- 3-26 The F-1 AVCS subsystem was received from AED and bench-tested. The testing was completed on 3-28. Results were satisfactory.

A group of batteries was tested during the past month. Of the seven tested, three appeared to be in fair condition. Four had five or more shorted cells. Modules #110, 115 and 126 were the good batteries. Modules #113, 117, 118 and 119 had shorted cells.

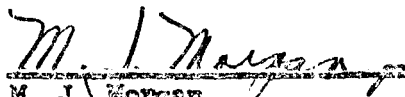
GENERAL

A new harness was fabricated to interconnect a battery power supply subsystem on the bench without using the BCU. This harness will permit use of a battery subsystem for bench-testing other subsystems in the Lab, and free the BCU for use in testing other power-supply subsystems as required. Also, if the BCU has to be taken to the main building of G-E for tests, it will not affect the availability of battery power for bench-testing other subsystems.

During the past month, there were five failures of equipment, as follows:

Satellite - 2 - APTS P-2, Battery #136

FGS #1 - 3 - +18 volt Power Supply, Mincom Recorder, +300 volt Power Supply


M. J. Morgan
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Nimbus Projects